

## SEQUENCE LISTING

5       <110> University of Virginia Patent Foundation  
Herr, John  
Allis, C. David  
Coonrad, Scott  
Wang, Yanming

10      <120> ePAD, an Oocyte Specific Protein  
  
<130> 00856-02  
  
<150> 60/439,170  
15      <151> 2003-01-10  
  
<150> 60/480,774  
<151> 2003-06-19  
  
20      <160> 10  
  
<170> PatentIn version 3.1  
  
25      <210> 1  
<211> 721  
<212> PRT  
<213> Homo sapiens  
  
30      <400> 1  
Met Val Ser Val Glu Gly Arg Ala Met Ser Phe Gln Ser Ile Ile His  
1                   5                   10                   15  
  
35      Leu Ser Leu Asp Ser Pro Val His Ala Val Cys Val Leu Gly Thr Glu  
20                  25                  30  
  
40      Ile Cys Leu Asp Leu Ser Gly Cys Ala Pro Gln Lys Cys Gln Cys Phe  
35                  40                  45  
  
45      Thr Ile His Gly Ser Gly Arg Val Leu Ile Asp Val Ala Asn Thr Val  
50                  55                  60  
  
50      Ile Ser Glu Lys Glu Asp Ala Thr Ile Trp Trp Pro Leu Ser Asp Pro  
65                  70                  75                  80  
  
55      Thr Tyr Ala Thr Val Lys Met Thr Ser Pro Ser Pro Ser Val Asp Ala  
85                  90                  95  
  
55      Asp Lys Val Ser Val Thr Tyr Tyr Gly Pro Asn Glu Asp Ala Pro Val  
100                105                110  
  
60      Gly Thr Ala Val Leu Tyr Leu Thr Gly Ile Glu Pro Phe Gly Ala Gln  
115                120                125

Arg Ser Ser Ser Gln Ser Phe Val Pro Leu Leu Pro Val Ser Glu Val  
 130                           135                           140

5

Ser Gln Ala Gln Glu Ala Glu Val Ser Leu Glu Val Asp Ile Tyr Arg  
 145                           150                           155                           160

10

Asn Gly Gln Val Glu Met Ser Ser Asp Lys Gln Ala Lys Lys Lys Trp  
 165                           170                           175

15 Ile Trp Gly Pro Ser Gly Trp Gly Ala Ile Leu Leu Val Asn Cys Asn  
 180                           185                           190

20 Pro Ala Asp Val Gly Gln Gln Leu Glu Asp Lys Lys Thr Lys Lys Val  
 195                           200                           205

25 Ile Phe Ser Glu Glu Ile Thr Asn Leu Ser Gln Met Thr Leu Asn Val  
 210                           215                           220

30 Ser Lys Glu Glu Ser Lys Lys Ala Arg Val Tyr Trp Pro Gln Lys Asp  
 245                           250                           255

35 Asn Ser Ser Thr Phe Glu Leu Val Leu Gly Pro Asp Gln His Ala Tyr  
 260                           265                           270

40 Thr Leu Ala Leu Leu Gly Asn His Leu Lys Glu Thr Phe Tyr Val Glu  
 275                           280                           285

45 Ala Ile Ala Phe Pro Ser Ala Glu Phe Ser Gly Leu Ile Ser Tyr Ser  
 290                           295                           300

50 Val Ser Leu Val Glu Glu Ser Gln Asp Pro Ser Ile Pro Glu Thr Val  
 305                           310                           315                           320

Leu Tyr Lys Asp Thr Val Val Phe Arg Val Ala Pro Cys Val Phe Ile  
 325                           330                           335

55 Pro Cys Thr Gln Val Pro Leu Glu Val Tyr Leu Cys Arg Glu Leu Gln  
 340                           345                           350

60 Leu Gln Gly Phe Val Asp Thr Val Thr Lys Leu Ser Glu Lys Ser Asn  
 355                           360                           365

Ser Gln Val Ala Ser Val Tyr Glu Asp Pro Asn Arg Leu Gly Arg Trp  
 370                   375                   380  
 5  
 Leu Gln Asp Glu Met Ala Phe Cys Tyr Thr Gln Ala Pro His Lys Thr  
 385                   390                   395                   400  
 10   Thr Ser Leu Ile Leu Asp Thr Pro Gln Ala Ala Asp Leu Asp Glu Phe  
 405                   410                   415  
 15   Pro Met Lys Tyr Ser Leu Ser Pro Gly Ile Gly Tyr Met Ile Gln Asp  
 420                   425                   430  
 20   Thr Glu Asp His Lys Val Ala Ser Met Asp Ser Ile Gly Asn Leu Met  
 435                   440                   445  
 25   Val Ser Pro Pro Val Lys Val Gln Gly Lys Glu Tyr Pro Leu Gly Arg  
 450                   455                   460  
 30   Val Leu Ile Gly Ser Ser Phe Tyr Pro Ser Ala Glu Gly Arg Ala Met  
 465                   470                   475                   480  
 35   Ser Lys Thr Leu Arg Asp Phe Leu Tyr Ala Gln Gln Val Gln Ala Pro  
 485                   490                   495  
 40   Val Glu Leu Tyr Ser Asp Trp Leu Met Thr Gly His Val Asp Glu Phe  
 500                   505                   510  
 Met Cys Phe Ile Pro Thr Asp Asp Lys Asn Glu Gly Lys Lys Gly Phe  
 515                   520                   525  
 45   Leu Leu Leu Ala Ser Pro Ser Ala Cys Tyr Lys Leu Phe Arg Glu  
 530                   535                   540  
 50   Lys Gln Lys Glu Gly Tyr Gly Asp Ala Leu Leu Phe Asp Glu Leu Arg  
 545                   550                   555                   560  
 55   Ala Asp Gln Leu Leu Ser Asn Gly Arg Glu Ala Lys Thr Ile Asp Gln  
 565                   570                   575  
 60   Leu Leu Ala Asp Glu Ser Leu Lys Lys Gln Asn Glu Tyr Val Glu Cys  
 580                   585                   590  
 65   Ile His Leu Asn Arg Asp Ile Leu Lys Thr Glu Leu Gly Leu Val Glu  
 595                   600                   605

Gln Asp Ile Ile Glu Ile Pro Gln Leu Phe Cys Leu Glu Lys Leu Thr  
 610 615 620

5

Asn Ile Pro Ser Asp Gln Gln Pro Lys Arg Ser Phe Ala Arg Pro Tyr  
 625 630 635 640

10 Phe Pro Asp Leu Leu Arg Met Ile Val Met Gly Lys Asn Leu Gly Ile  
 645 650 655

15 Pro Lys Pro Phe Gly Pro Gln Ile Lys Gly Thr Cys Cys Leu Glu Glu  
 660 665 670

20 Lys Ile Cys Cys Leu Leu Glu Pro Leu Gly Phe Lys Cys Thr Phe Ile  
 675 680 685

Asn Asp Phe Asp Cys Tyr Leu Thr Glu Val Gly Asp Ile Cys Ala Cys  
 690 695 700

25

Ala Asn Ile Arg Arg Val Pro Phe Ala Phe Lys Trp Trp Lys Met Val  
 705 710 715 720

30 Pro

<210> 2  
 <211> 2166  
 <212> DNA  
 35 <213> Homo sapiens

<400> 2

40 atggtcagcg tggagggccg agccatgtcc ttccagagta tcatccacct gtcctggac . 60  
 agccctgtcc atgcgcgttg tgtgttggc acagaaatct gcttggatct cagcgggtgt 120  
 gcccccccaga agtgcgcagtg ctgcaccatc catggctctg ggagggtctt gatcgatgtg 180  
 45 gccaacacgg tgatttctga gaaggaggac gccaccatct ggtggccct gtctgatccc 240  
 acgtacgcca cagtgaagat gacatcgccc agcccttccg tggatgcggta taaggtctcg 300  
 gtcacatact atgggccaa cgaggatgcc cccgtggca cagctgtgct gtacctcact 360  
 50 ggcattgaac ctttggagc tcagaggagc tcttctcagt ctttgcctt gctgcttcca 420  
 gtcagtgaag tgtctcaggc tcaggaggca gaggtctctc tagaggtaga catctaccgc 480  
 55 aatgggcagaat ttgagatgtc aagtgcacaaa caggctaaga aaaaatggat ctggggtccc 540  
 agcggttggg gtgccttcct gcttgtaat tgcaaccctg ctgatgtggg ccagcaactt 600  
 gaggacaaga aaaccaagaa agtgatctt tcagaggaaa taacgaatct gtcccagatg 660  
 60 actctgaatg tccaaggccc cagctgtatc ttaaaagaaat atcggcttagt cctccatacc 720

tccaaaggaag agtcgaagaa ggcgagagtc tactggcccc aaaaagacaa ctccagtacc 780  
 5 tttgagttgg tgctggggcc cgaccagcac gcctatacct tggccctcct cgggaaccac 840  
 ttgaaggaga ctttctacgt tgaagctata gcattccat ctgccgaatt ctcaggcctc 900  
 atctcctact ctgtgtccct ggtggaggag tctcaagacc cgtcaattcc agagactgtg 960  
 10 ctgtacaaag acacggtggt gttccgggtg gtcctgtg tttcattcc ctgtacccag 1020  
 gtgcctctgg aggttacct gtgcagggag ctgcagctgc agggtttgtt ggacacagtg 1080  
 15 acgaagctga gtgagaagag caacagccag gtggcatctg tctatgagga ccccaaccgc 1140  
 ctggcaggt ggctccagga tgagatggcc ttctgctaca cccaggctcc ccacaagaca 1200  
 acgtccttga tcctcgacac acctcaggcc gccgatctcg atgagttccc catgaagtac 1260  
 20 tcactgagcc ctggtattgg ctacatgatc caggacactg aggaccataa agtggccagc 1320  
 atggattcca ttggAACCT gatgggttcc ccacctgtca aggtccaagg gaaagagtac 1380  
 25 ccgctggca gagtcctcat tggcagcagc ttttacccca ggcgcagaggg ccggccatg 1440  
 agtaagaccc tccgagactt cctctatgcc cagcaggtcc aagcgccggt ggagctctac 1500  
 tcagattggc taatgactgg ccacgtggat gagttcatgt gttcatccc cacagatgac 1560  
 30 aagaatgagg gcaaaaaggc cttectgtg ctcctggcca gccccagtgc ctgctataaa 1620  
 ctgttccgag agaaacagaa ggaaggctat ggacgcgtc ttctgtttga tgagcttaga 1680  
 35 gcagatcagc tcctgtctaa tggaaaggaa gccaaaacca tcgaccaact tctggctgat 1740  
 gaaaggcctga agaagcagaa tgaatacgtg gagtgcatcc acctgaaccc tgacatcctg 1800  
 aagacggagc tgggcctggc ggaacaggac atcatcgaga ttccccagct gttctgttg 1860  
 40 gagaagctga ctaacatccc ctctgaccag cagcccaaga ggttccttgc gaggccatac 1920  
 ttccctgacc tggcggat gattgtgatg ggcaagaacc tggggatccc caagcccttt 1980  
 45 gggccccaaa tcaagggac ctgctgcctg gaagaaaaga tttgctgctt gctggagccc 2040  
 ctgggcttca agtgcaccc ttcatgtac tttgactgtt acctgacaga ggtcgagac 2100  
 atctgtgcct gtgccaacat ccgcgggtg cccttgcct tcaaatggtg gaagatggta 2160  
 50 ccttag 2166

<210> 3  
 <211> 664  
 55 <212> PRT  
 <213> Mus musculus

<400> 3

60 Met Val Gly Met Glu Ile Thr Leu Asp Ile Ser Lys Cys Ala Pro Asp  
 1 5 10 15

Lys Cys Lys Ser Phe Thr Ile Arg Gly Ser Pro Arg Ile Leu Ile His  
 20 25 30

5

Ile Ser Ser Ser Val Ile Ala Gly Lys Glu Asp Thr Val Val Trp Arg  
 35 40 45

10

Ser Met Asn His Pro Thr Val Ala Leu Val Arg Met Val Ala Pro Ser  
 50 55 60

15

Pro Thr Val Asp Glu Asp Lys Val Leu Val Ser Tyr Phe Cys Pro Asp  
 65 70 75 80

20

Gln Glu Val Pro Thr Ala Thr Ala Val Leu Phe Leu Thr Gly Ile Glu  
 85 90 95

25

Ile Ser Leu Glu Ala Asp Ile Tyr Arg Asp Gly Gln Leu Asp Met Pro  
 100 105 110

30

Ser Asp Lys Gln Ala Lys Lys Trp Met Trp Gly Met Asn Gly Trp  
 115 120 125

Gly Ala Ile Leu Leu Val Asn Cys Ser Pro Asn Ala Val Gly Gln Pro  
 130 135 140

35

Asp Glu Gln Ser Phe Gln Glu Gly Pro Arg Glu Ile Gln Asn Asn Leu  
 145 150 155 160

40

Ser Gln Met Asn Val Thr Val Glu Gly Pro Thr Ser Ile Leu Gln Asn  
 165 170 175

45

Tyr Gln Leu Ile Leu His Thr Ser Glu Glu Glu Ala Lys Lys Thr Arg  
 180 185 190

50

Val Tyr Trp Ser Gln Arg Gly Ser Ser Ala Tyr Glu Leu Val Val Gly  
 195 200 205

55

Pro Asn Lys Pro Val Tyr Leu Leu Pro Thr Phe Glu Asn Arg Arg Lys  
 210 215 220

Glu Ala Phe Tyr Val Glu Ala Thr Glu Phe Pro Ser Pro Ser Phe Ser  
 225 230 235 240

60

Gly Leu Ile Ser Leu Ser Leu Ser Leu Val Glu Lys Ala His Asp Glu  
 245 250 255

Cys Ile Pro Glu Ile Pro Leu Tyr Lys Asp Thr Val Met Phe Arg Val  
 260 265 270  
 5

Ala Pro Tyr Ile Phe Met Pro Ser Thr Gln Met Pro Leu Glu Val Tyr  
 275 280 285  
 10

Leu Cys Arg Glu Leu Gln Leu Gln Gly Phe Val Asp Ser Val Thr Lys  
 290 295 300

15 Leu Ser Glu Lys Ser Lys Val Gln Val Val Lys Val Tyr Glu Asp Pro  
 305 310 315 320

20 Asn Arg Gln Ser Lys Trp Leu Gln Asp Glu Met Ala Phe Cys Tyr Thr  
 325 330 335

25 Gln Ala Pro His Lys Thr Val Ser Leu Ile Leu Asp Thr Pro Arg Val  
 340 345 350

30 Ser Lys Leu Glu Asp Phe Pro Met Lys Tyr Thr Leu Thr Pro Gly Ser  
 355 360 365

35 Gly Tyr Leu Ile Arg Gln Ile Glu Asp His Arg Val Ala Ser Leu Asp  
 370 375 380

40 Ser Ile Gly Asn Leu Met Val Ser Pro Pro Val Lys Ala Gln Gly Lys  
 385 390 395 400

45 Ser Glu Gly Arg Asp Met Asn Lys Gly Leu Arg Glu Phe Val Tyr Ala  
 420 425 430

50 Gln Gln Val Gln Ala Pro Val Glu Leu Phe Ser Asp Trp Leu Met Thr  
 435 440 445

Gly His Met Asp Gln Phe Met Cys Phe Val Pro Thr Asn Asp Lys Asn  
 450 455 460

55 Asn Asp Gln Lys Asp Phe Arg Leu Leu Leu Ala Ser Pro Ser Ala Cys  
 465 470 475 480

60 Phe Glu Leu Phe Glu Gln Lys Gln Lys Glu Gly Tyr Gly Asn Val Thr  
 485 490 495

Leu Phe Glu Asp Ile Gly Ala Glu Gln Leu Leu Ser Asn Gly Arg Glu  
 500 505 510

5

Ser Lys Thr Ile Ser Gln Ile Leu Ala Asp Lys Ser Phe Arg Glu Gln  
 515 520 525

10 Asn Thr Tyr Val Glu Lys Cys Ile Ser Leu Asn Arg Thr Leu Leu Lys  
 530 535 540

15 Thr Glu Leu Gly Leu Glu Asp Lys Asp Ile Ile Leu Ile Pro Gln Leu  
 545 550 555 560

20 Phe Cys Leu Glu Gln Leu Thr Asn Val Pro Ser Asn Gln Gln Ser Thr  
 565 570 575

25 Lys Leu Phe Ala Arg Pro Tyr Phe Pro Asp Met Leu Gln Ile Ile Val  
 580 585 590

30 Leu Gly Lys Asn Leu Gly Ile Pro Lys Pro Phe Gly Pro Lys Ile Asn  
 595 600 605

35 Gly Thr Cys Cys Leu Glu Glu Lys Val Cys Gly Leu Leu Glu Pro Leu  
 610 615 620

40 Ile Gly Asp Val Cys Ala Ser Ala Ile Ile Asn Arg Val Pro Phe Ala  
 645 650 655

45 Phe Lys Trp Trp Lys Met Thr Pro  
 660

50 <210> 4  
 <211> 2341  
 <212> DNA  
 <213> *Mus musculus*

55 <400> 4

gggtaaggac tgctgacagt ggctagttt gtaagccag ccatgtcttt tcagaactca 60  
 ctcagcctgt ctctggtcaa tccccccat gccctctgca tggtaggcatt gaaatcacc 120  
 ttggacatca gcaagtgtgc accggacaag tgcaagtctt tcaccatccg tggttcccc 180  
 60 agatcttga tccacatctc tagtccgtc atcgctggca aagaggacac tgtggtctgg 240

gatgaagaca aggtgctggc ctcctacttc tgtcctgacc aagaagtccc cacggccaca 360  
 5 gctgtgctgt ttctcaccgg catcgagatc tccctggagg cagacatcta tcgagatgga 420  
 caactggaca tgccaagtga taagcaagct aagaaaaat ggatgtgggg tatgaacggc 480  
 10 tggggagcca tcctgcttgc gaattgttagc cctaattgtc tggccagcc tcatgtac 540  
 tcctttcagg agggccccag agaaatacag aacaacctgt ctcagatgaa tgtaactgtg 600  
 gagggccccca ccagcatcct acagaattac cagttgatcc tacatacctc cgaagaagag 660  
 15 gcaagaaga caagagtcta ctggtctca agaggctcct ctgcgtatga actgggttg 720  
 ggacccaaca agcctgtcta tctctgcct acctttgaga accgttagaa agaggcttc 780  
 20 tacgtagaag ccacggaatt cccatctccc agttctcg ggctgtatc cttgtcactc 840  
 tccctagtag aaaaggctca cgacgagtgc atcccagaga ttccgtctca taaggataca 900  
 gtgatgttcc ggggtggcacc ttatatcttc atgcccagca cccagatgcc tctagaggtt 960  
 25 tacctgtgca gggagctaca gctgcaaggc tttgtggact cagtgaccaa gctgagcgg 1020  
 aagagcaaag tgcaggttgt aaaggcttat gaggacccca accgcccagag caagtggctc 1080  
 30 caggacgaga tggcttctg ctatactca gtcctcaca agacgggtgc attgtatcctt 1140  
 gacaccccaa gggttccaa gctggaagac ttcccattga aatacacact gaccctggc 1200  
 tctggctacc tgatccgaca aattgaggac caccgggtgg cttagcctgga ttccatcggtt 1260  
 35 aacctgtatgg tatctccgccc tgtcaaggct cagggcaaag actaccctct agggagggtc 1320  
 ctcattggtg gcagctttta cccagctct gagggccggg acatgaacaa gggcctgcga 1380  
 40 gaattcgtgt atgcccagca ggtgcaggcc cctgtggAAC ttttctcgga ctggctgtatg 1440  
 accggtcaca tggatcaatt catgtgcttt gtccctacca atgataaaaa caacgaccag 1500  
 aaggacttcc gcctgtgtgt gcccagcccc agtgcctgtt ttgagctgtt cgaacagaag 1560  
 45 cagaaggaag gctatggaa cgtgaccctg tttgaagaca ttggagcaga acagctcctt 1620  
 tctaattggaa gggagagcaa aactatttcc caaatctgg ctgacaagag ttttcgagag 1680  
 50 cagaacacccat atgttgagaa gtgtatcagc ctgaaccgca ccctcctgaa gacagaactg 1740  
 ggattggagg acaaggacat catcctgatc ccgcagctct tctgcctgga gcagctgacg 1800  
 aatgtcccct ccaaccagca gagcaccaaa ctttcgcga gcccgtactt ccccgacatg 1860  
 55 ctgcagataa tcgtgttggg caagaacctt ggaatccccaa agcccttgg gccaaaatc 1920  
 aatggcacct gctgcctaga agagaaagtg tgtggattac tggagccctt gggctcaag 1980  
 60 tgacaccccttca ttgatgattt tgactgtac ctggccaaca tagggacgt ctgtgccagt 2040  
 gccatcataa acagggtgcc atttgcattc aagtgggtggaa agatgacccca ataaacccct 2100

ggccctggca cggccagtcc ggcgcgtac gatggcctt tgccatagat agtagtggt 2160  
 5 gcgagcgttg ttgttgcact gggtcgaagg gacgaaagct gggagttagg gtctctcaca 2220  
 tctaccagct tgacacttct ggaggggaaa agggaaaaga ggcgcctatgt aaacaaattg 2280  
 ccatagagcc aataaagcat ggtattctga atacaaaaaaa aaaaaaaaaa aaaaaaaaaa 2340  
 10 a 2341

<210> 5  
 <211> 28  
 15 <212> PRT  
 <213> Homo sapiens

<400> 5

20 Glu Pro Phe Gly Ala Gln Arg Ser Ser Ser Gln Ser Phe Val Pro Leu  
 1 5 10 15

25 Leu Pro Val Ser Glu Val Ser Gln Ala Gln Glu Ala  
 20 25

<210> 6  
 <211> 10  
 30 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> MOD\_RES  
 35 <222> (3)..(3)  
 <223> METHYLATION

<400> 6

40 Ser Gly Arg Gly Lys Gly Gly Lys Gly Cys  
 1 5 10

45 <210> 7  
 <211> 8  
 <212> PRT  
 <213> Homo sapiens

50 <220>  
 <221> MOD\_RES  
 <222> (4)..(4)  
 <223> METHYLATION

55 <400> 7

60 Ala Arg Thr Lys Gln Thr Ala Arg  
 1 5

5       <210> 8  
      <211> 9  
      <212> PRT  
      5    <213> Homo sapiens  
  
10      <220>  
      <221> MOD\_RES  
      <222> (5)..(5)  
      10    <223> METHYLATION  
  
          <400> 8  
  
15    Gln Thr Ala Arg Lys Ser Thr Gly Val  
      1                   5  
  
          <210> 9  
20    <211> 10  
      <212> PRT  
      <213> Homo sapiens  
  
25    <220>  
      <221> MOD\_RES  
      <222> (1)..(1)  
      <223> PHOSPHORYLATION  
  
30    <400> 9  
  
      Ser Gly Arg Gly Lys Gly Gly Lys Gly Cys  
      1                   5                   10  
  
35    <210> 10  
      <211> 24  
      <212> PRT  
      40    <213> Mus musculus  
  
40    <400> 10  
  
      Ser Gly Gly Ser Tyr Gly Ser Ser Gly Gly Arg Gly Ser  
      1                   5                   10                   15  
  
45    <210> 15  
      <211> 20  
      <212> PRT  
      <213> Mus musculus  
  
      Ser Ser Gly Gly Gly Val Lys  
      20